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Cost and Management

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EDITORIAL COMMENT . . .

Tight Money and The Industrial Accountant

ALL the recent issues of Canadian newspapers and periodicals are full of more or less detailed dissertations on the so-called "tight money" policy practised by the Bank of Canada, denied by the government, and reluctantly put into effect by the chartered banks. Let's ask ourselves the question: "To what extent is the industrial accountant affected by this economic development?"

Assuming that the industrial accountant is concerned with budgeting and planning of capital expenditures, the consequences of tight money may easily put a crimp into his estimates, or at least his time schedule. The increased cost and shortage of money will enter into consideration of rentability and return on investment. It will strongly affect "terms of payment" when purchasing and selling. It will be felt most strongly by those who look after the financial position of their companies, including those who have to meet the next payroll.

What is tight money? Unfortunately, the answer is not as simple as the question. Some economists explain the recent developments by pointing out that money is a commodity which has a price—the interest rate. The demand for money may be greater than its supply or the supply may be greater than the demand at any one time. Normally, there is quite a bit of flexibility in the money supply. Right now, the demand is extended by government action. Our government made very extensive promises in the two election campaigns, the fulfilment of which, even in part, required embarking on deficit spending to an extent which seriously affected the money market. This was coupled with an accelerating recovery from the 1957-58 slump in general activity in the national economy. This recovery alone though, without the extraordinary demands for government expenditures, would hardly have led to the tremendous rise in interest rates (within one year, the bank rate has risen from 1.12% at the end of July, 1958 to over 6%, i.e., far over a 400% increase in little more than a year). A fantastic increase in the price of any other commodity would certainly have made the headlines at any time.

Every industrial accountant knows that marginal units added or deducted can have a disproportionate influence on the total cost and/or price structure. This seems to be the case with the price of money. Whatever are the forces which influence and affect this development, the tight money squeeze has gone further than the one experienced in early 1956, when 15-year bonds yielded 3.57% against more than 6% now.

In the first period of tight money in recent years, the bank rate never even came close to the 6% interest limit imposed by the Bank Act on the banks. Even if the Prime Minister is right in the statement that the banks hardly ever borrow money at the discount rate (which borrowing at the present rate of over 6% is practically impossible), the fact nevertheless stands out that the discount rate is characteristic for the price of money on the market and the banks cannot possibly hope to attract and hold deposits, if and when they have to compete with the yields of government short and long term securities in the vicinity of the rate charged by themselves.

The industrial accountant should draw the following conclusions from the tight money policy which the commercial banks will have to follow:

1. The banks will approve new loans only in very exceptional circumstances, if at all.
2. The banks will hold the borrowers to the exact limit of their approved loans and/or overdrafts. The usual extensions beyond the recorded limits, permitted in the discretion of the branch manager, will in many cases be withdrawn or no longer permitted. This will hit many small and middle-sized businesses which continually used these convenient extensions of their bank facilities.
3. Loans (with the exception of rather unusual term loans) are usually approved, either for a specific transaction or for one year from the time of one submission of the financial statements to the bank to the next submission. As these loans come up for renewal, the banks will not approve loans which have not been used in the past year, cutting into a reserve of money supply on which many well-financed businesses relied in their planning.

   The restriction in bank loans will, in due course, restrict or even dry up many secondary sources of financing, e.g., factors, finance companies, investment companies. In many cases, these supplement their own capital by bank loans, which is quite profitable, taking into account that effective interest rates charged by these sources vary from 10% to 24% per annum.

   The first effect of the restriction in loans will be an attempt by the enterprises which are hit by these measures to extend their terms of payment with their suppliers, slowing down their payments. On the other hand, the same enterprises will try harder to collect their own accounts receivable in order to satisfy their pressing debts to suppliers. This will, therefore, increase competition in collecting.

The industrial accountant who looks after credit or collection will, therefore, become busier than ever in trying to get his company's proper share of collections and making sure that the sales department recognizes the need for selectivity in servicing customers. Projects become less attractive in their yields when compared to a high discount rate or cost of money.

The main aim of any tight money policy is avoidance of a runaway inflation which, at the moment, is more a potential than a noticeable fact, as the most recent Consumer Price Index figures show a very modest increase only for the past month

or the past year (½% or 1.2% respectively). The trouble with all monetary measures is that their effect is subject to a considerable time lag, which makes the cure take effect when the disease has already disappeared. Tight money measures try to prevent the boom from rising too fast and particularly to stretch capital investments over a more reasonable period than would result if all the growth plans materialized at the same time, which admittedly, would lead to a mad scramble for material, supplies and labour, and the consequent building up of prices. It seems still impossible to regulate the stream of investments. Apparently, the powers that be cannot turn the tap on and off with immediate effect, neither in Canada nor anywhere else.

One thing seems certain—that those who prepare cash forecasts will have their hands full in estimating revenue and accordingly scheduling those expenditures which are controllable, i.e., particularly capital appropriations.

It is small consolation that our big neighbour to the south is plagued by the same shortage of funds after 15 years of what the *Wall Street Journal* calls government "spending like a drunken sailor."

In the rather heated discussions about the justification of the tight money measures, the industrial accountant should keep an objective viewpoint. We should not hope to follow a program of accelerated growth without running into shortages and consequent restrictions. Nevertheless, we should not let ourselves be fooled by artificial measures which are trying to confuse the picture, as the recent manipulation of the discount rate by restriction of the weekly sale of Treasury Bonds. The industrial accountant should try to stay among those who need not and will not be fooled at any time!

SOCIETY STAFF APPOINTMENTS

T. A. Kennedy, President of the Society of Industrial and Cost Accountants of Canada, is pleased to announce the addition of two new members to the administrative staff of the Society. J. W. Ross has been appointed Administrator, Technical Services and Miss Barbara M. Ferris has been appointed Administrative Assistant, Educational Services.

Mr. Ross is a native of Nova Scotia and was educated at Dalhousie University where he received the degree B. Com. He was formerly associated with the Ford Motor Company of Canada Limited, Oakville, as Supervisor in the Cost Department.

Miss Ferris was previously employed with Belkin Paper Box Ltd. in Vancouver, where she was Purchasing Agent. She was the first woman in British Columbia to receive the R.I.A. certificate and was a Gold Medalist in her final examinations.

The appointments are in line with the extensive program of administrative reorganization which has been taking place in the Society in the last few years to accommodate the rapid growth of membership.

John W. Ross, B. Com.

Barbara M. Ferris, R.I.A.

1959 MEDAL WINNERS

J. R. Milligan

G. M. Tidball, C.A.

The Society of Industrial and Cost Accountants is pleased to announce the winners of the two national awards for high achievement in the final examinations.

The Society's Gold Medal, awarded for the highest mark in Canada in the Advanced Cost Accounting examination, was won this year by G. M. Tidball of Kitimat, B.C. The winner of the Society's Gold Medal for the highest mark in Canada in Fundamentals of Cost Accounting was J. R. Milligan of Toronto. Mr. Milligan also won the Ontario Society's Gold Medal for obtaining the highest mark in this subject in the province.

A Chartered Accountant, Mr. Tidball has been with the Aluminum Company of Canada, Limited since 1957, as Method Accountant, Property Accountant, and presently as Administrative Assistant to the Manager. Born in Alberta, he was educated in Penticton, B.C. and at the University of British Columbia. He articled in Penticton, receiving his C.A. in 1956. This Fall he is attending the Harvard Graduate School of Business Administration where he is enrolled in the course leading to the degree, Master of Business Administration.

Mr. Milligan has been in Canada since 1957. While in his native Scotland he was employed successively in the banking and accounting fields, receiving the Associates' Diploma of the Institute of Bankers and passing the intermediate examinations of the Institute of Cost and Works Accountants. Upon arriving in Toronto, he joined the construction firm of Refinery Engineering Ltd. and later became Cost Accountant with Roxalin of Canada Ltd. Since last April he has been with Cities Service Oil Co. Ltd., where he is Accounting Supervisor.

PERSONALS

D. R. ALEXANDER, B. Com., R.I.A., has been appointed Supervising Auditor, Consumer Taxation, of the Province of British Columbia. Mr. Alexander is the immediate Past President of the Society of Industrial and Cost Accountants of British Columbia.

K. R. KEEPING, R.I.A., has been appointed Warehouse Manager for the Winnipeg branch of his company, Dominion Bridge Company Limited. Mr. Keeping is immediate Past President of the Society of Industrial and Cost Accountants of Manitoba.

PROFIT CONTROL FOR MANAGEMENT

Management Applications of the Break-Even Chart for the Prophet Company

By Louis J. Smitten,
Controller,
General Foods Ltd.,
Toronto, Ontario.

This is the final instalment of a two-part article explaining the workings of a break-even chart. Last month the construction and uses were described. This month the author delves further into its value to management using a hypothetical case to show how profits can be improved through the break-even chart.

IN the previous article we saw how the Prophet Company constructed a P/V or Profit/Volume Break-Even Chart from their conventional Profit and Loss Statement. We also reviewed the patterns of fixed and variable cost relationships to volume and price and their effect on profitability. We also examined some of the possible uses of this technique and gave a specific example of a pricing decision.

We will now review the reaction of the management of the Prophet Company to their profits and the steps they took in order to improve their profits.

THE EFFECT OF VOLUME ON PROFITS

The completed break-even chart in Figure 5* showed the position of the Prophet Company for the year just completed. A profit of $59,570, which was equivalent to 7.46% of Net Sales, was recorded. The break-even point for the scale of operations was at 6,594,531 crystal balls.

The management's first reaction to this picture is that the profit, while moderately satisfactory, needs to be greater. A 7½% profit on Net Sales is a fair showing, but percentage of sales is not the only measure of profit that should be considered. The company's entire capitalization is $750,000 in common stock, which should receive a minimum dividend return of 6%. That means a profit of at least $45,000. Income taxes and some addition to surplus raises this figure to a minimum requirement of $100,000.

So the first question very naturally is—what volume is needed to produce this $100,000 profit?

Figure 7 shows the answer supplied by the break-even chart. The volume needed to earn this 66% larger profit is seen at 14,407,031 units. In other words, a 28% increase in volume is required to produce an increase from 7.5% to 9.8% in the profit percentage of sales.

*Cost and Management, September 1959, P. 305.

Mr. Smitten joined General Foods Corporation in New York in 1954 as a staff member of the Administrative and Methods Planning Department specializing in cost and budget procedures. In 1955 he was transferred to Toronto to manage the Canadian subsidiary's Budget and Analysis Department. He was appointed Controller of Canadian operations in 1957. His earlier career included nine years with Stevenson, Jordan and Harrison, management engineers, where he specialized in profit planning techniques through the use of direct costs, standard costs and flexible budgets. An active member of S.I.C.A., Mr. Smitten presented this article at the 38th Annual Conference of S.I.C.A. held this year at St. Andrews, New Brunswick.

But the business was aggressively conducted and could not possibly have secured that additional 28% volume. As a matter of fact, the end of the year witnessed a rapid decline in the company's volume of business as a result of the country-wide depression and constriction of purchasing power. Prospects for the coming year should, therefore, consider an even smaller volume in order to secure a reasonable forecast for the guidance of the company's policies.

So the management of the Prophet Company next wanted to know what would happen to their profit prospects if a 10% reduction in volume is encountered. Figure 8 supplies the answer.

If volume is reduced 10%, profit will fall from $59,570 to $45,190, a loss of 25%. A 7½% profit on Net Sales has been *reduced* to 6.3% whereas a *higher* profit is needed. Obviously, something needs to be done to either cost or price.

Having seen how the break-even chart may be used to determine:

(a) The volume for a desired profit

(b) The profit at a certain volume

and knowing that market conditions made it useless to consider volume further as the answer to their profit problem, the executives of the company look to—

THE EFFECT OF COSTS ON PROFIT

It has been seen from the break-even charts thus far prepared that there are two general classes of costs—Fixed and Variable. If cost reduction is to be considered as a means of securing an adequate profit (and its effect is frequently over-estimated), it is first necessary to find out which of the two groups, Fixed or Variable, offers the greatest opportunities.

There are too many chances of crippling a business by entering upon a cost reduction program in a haphazard, hit-or-miss fashion. Sometimes the answer to profit improvement lies in spending more money—but that's another subject. Therefore, before making plans for definite economies, the break-even chart in Figure 9 was prepared.

This shows the profit picture at the reduced volume of 10,125,000 units after a 10% reduction in Fixed Cost has been calculated.

Note that the profit has increased by $8,441 which is the amount of the Fixed Cost saving—just 10% of the total Fixed Cost of $84,410. This extra profit is questionable in view of the lowered efficiency that may result from a curtailment of necessary expenses.

The break-even point has been lowered from 6,594,531 units to 5,935,078 at a value of $421,390—a reduction of a little more than half a million units. Securing but little satisfaction from the possible saving to be found in Fixed Cost reductions, the management next turns to a lowering of Variable Cost by 10% as shown in Figure 10.

The effect of this is to increase the Contribution Margin to 26.2%. This means that each dollar would contribute 26.2¢ Contribution Margin with this reduction in variable cost instead of the 18¢ presently being contributed. This is an improvement of 8.2¢ per sales dollar. (This, incidentally, would be true at any sales volume. This is one of the advantages of separating Fixed and Variable Costs. You can trace the effect of your decisions directly to profits.)

Here the profit increases substantially from $45,190 to $104,137, surely a worth-

while gain if it can be made.

The break-even point falls to the extremely low level of 4,500,000 units with a value of $319,500. The profit area of the chart is much wider and longer and offers many opportunities for a satisfactory profit even if volume should fall lower than the 10% drop anticipated.

It is also quite evident that the increase resulting here from a 10% saving in Variable Cost far outweighs that secured from a similar percentage reduction in Fixed Cost. And it may be readily seen that the greater effectiveness of this Variable Cost saving is due to the fact that Variable Cost is so large a part of Total Cost. It comprises over 80% of the total at a volume of 10,125,000 units. However, it is very difficult to reduce variable cost right across the board. For example, raw material costs are often not under the control of the purchaser, so in actual practice, even the variable cost must be examined in detail, that is Raw Materials, Packing Material, Labour, Variable Overheads, Salesmen's Commission, etc.

From the charts in Figures 9 and 10, the management of the Prophet Company has witnessed the relative value of different kinds of cost reductions. They have prepared these charts to appraise properly the creation of the profits through cost reductions and to learn more about the operation of this break-even chart method of profit planning.

At this point a big BUT enters into their calculations and makes necessary an entire revision of their prospects. A volume of 10,125,000 units seems attainable and reasonable. And that 10% savings in Fixed Cost can be made without too much difficulty.

BUT—instead of reducing Variable Cost, the company is faced with a 10% *increase* in direct and indirect labour as a consequence of the renewal of their union labour contract.

Therefore, a redrafting of the chart picture must be made to incorporate the 10% *increase* in labour and 10% *reduction* in Fixed Costs—all at the reduced volume of 10,125,000 units and the same average selling price of $.0710 per unit.

Figure 11 is the corrected chart portraying this situation.

The effect of increases or decreases in other items cost may be readily determined as has been done in this instance of a labour cost advance and a Fixed Cost saving. The procedure is—

1. Calculate the cost per unit for the particular expense from the information in Figure 2*.
2. Apply the percentage change to this cost and secure the amount of the change per unit.
3. Adjust the total Fixed or Variable Cost per unit by the amount of the increase or decrease.

In this way a new total Fixed or Variable Cost per unit is figured and its usage in plotting the chart will show the effect of changes in any one or more expenses.

And thus is demonstrated the influence of cost changes on profit. In spite of a 10% saving to be earned by economies in Fixed Cost, an increase of 10% affecting only *one quarter of all Variable Cost* causes a reduction of 16% from the profit of

*Cost and Management, September 1959, p. 302.

$45,190 (Figure 8) which was forecast at a lower volume *before* any changes in the cost set-up were contemplated.

Further, these cost changes move the break-even point to its highest position yet shown at 6,768,800 units and the profit triangle is reduced accordingly.

The management now *sees* how cost changes affect profit and, faced with a prospective profit of $37,757 which is entirely inadequate and only about 1/3 of the needed $100,000, turns next to consider the remaining factor of price.

WHAT PRICE FOR PROFIT?

If the Prophet Company is to plan and next year earn that minimum profit of $100,000 it must secure a better average price for its product. A lower volume of 10,125,000 units is anticipated. All possible cost economies have been discounted and allowances made for substantially higher labour cost. Raw materials, which are the largest single item of cost, are assumed to cost the same. The only avenue to a better profit is a more adequate price.

How much should the average selling price per unit be increased? What should it be to earn a profit of $100,000? The break-even chart in Figure 12 supplies the answer to these questions.

We show the $100,000 additional profit we want. Add to it the Fixed Cost of $76,149 we must pay for. This gives us a total of $176,149 which is the amount we must receive over Variable Cost. Our projected volume is 10,125,000 units. If we divide our 10,125,000 units into $176,149 we know how much contribution margin we must get per unit to realize our profits. This division gives us a figure of .01740. Our Variable Cost is .05975. When we add these two figures together we get a figure of .07715 which must be our new sales realization per unit.

The correct answer, therefore, to this question of "What Price for Profit?" is—

> The average selling price must be increased 8.7% to $.07715 per unit to assure a $100,000 minimum profit.

And note that in securing this answer the break-even point on the chart moved down to 4,377,000 units with a value of $337,689. This more than ample price structure produces an enlarged profit area that will be extremely beneficial if, by chance, volume prospects should not decline by the expected 10%.

This average price increase of 8.7% seems reasonably obtainable to the executives who conduct the business and they decide to adjust their price schedules to produce an average price of 7¾¢ per unit. This is slightly higher than the price of $.07715 required for the $100,000 profit and will provide a small excess to use for unforeseen contingencies.

With their thoughts on the value of price as a profit producer, they realize that this chart method will also show how much prices may be *reduced* as volume grows or cost declines:

THE FALLACY OF PRICE CUTTING

This matter of reduced price brings to mind the prevalent idea that the effect of lower prices on profit may be readily offset by increasing volume. To prove once and for all the fallacy of this widely held viewpoint as it applies to their business, the chart shown is Figure 13 was prepared.

This break-even chart shows the additional compensating volume that would be

required to maintain the profit objective of $100,000 if selling prices are lowered. The chart is based on the same cost data as shown in Figure 12 and carries three lines of Sales Income, one at the $.07715 price previously determined, and the other two lines at 5% and 10% reductions from this level.

The chart shows at a glance the great disparity between price reductions and their additional compensating volume requirements.

A Price Reduction of	Requires	A Unit Increase of
5%		28.3%
10%		79.8%

Clearly, extremely large volume increases are needed to offset the effect of small price reductions on profit. A 5% lower price requires 28.3% more volume to secure the same profit—more volume than the business enjoyed last year. A 10% price reduction calls for 79.8% more volume—but that is beyond the mill's capacity.

These indicated volume increases are clearly out of the question at the present time. Even if business were on the upswing, a volume increase of about 80% to compensate for a 10% price cut would be unthinkable.

The dangers of a price-cutting program are clearly seen. Here is vividly pictured the greatly disproportionate volume increases that are required if minor price reductions are not to result in the reduction of profits. And the futility of price cutting to stimulate profitable volume is demonstrated.

The management of the Prophet Company has thus become acquainted with the basic uses of the break-even chart method and its related mathematics. They understand that this profit forecasting device enables them to see just how volume, cost and price combine to produce a desired profit objective.

And, as never before, they appreciate the necessity of planning for profit. Had their business entered the new year without a definite and reasonably obtainable volume goal ahead of it, no knowledge of the effect of increases in costs, and with only a wish that prices were better, the results might well have been disastrous.

But with these charts, and a careful weighing of volume, costs and price, they are able to prepare the sound foundation for business policies that will successfully carry them through a trying year.

They are now in a position to adjust their operations to certain definite specifications which, if met, will enable them to pay their shareholders a fair return on invested capital. In addition they will be able to add to surplus for that "rainy day."

It is of course prudent to plan for a profit which will meet all financial withdrawals, such as dividends, and leave a suitable addition to the surplus account. What constitutes this proper addition for which to strive, is subject to a number of interpretations.

The usual practice is to carry over at the end of the period whatever is left over after dividends have been paid or declared, in accordance with tax problems, cash needs, business expansion plans, and many other considerations.

But it is a far sounder practice to plan or budget a certain definite surplus addition which, if consistently secured, will insure the continuation and growth of the enterprise.

It is suggested that the calculation of an adequate profit be made, keeping in mind that the employed capital of a business is entitled to a fair return.

VOLUME, COST OR PRICE—WHICH WAY TO PROFIT?

The experiences of the Prophet Company with the use of the break-even chart as outlined previously are intended to be typical of problems encountered by industry as they develop the relative importance of Volume, Cost and Price. But consider again for a moment which of these three basic factors offers the greatest opportunities for profit.

COST Control possibilities will vary widely from industry to industry and company to company.

Furthermore, the large bulk of the Total Cost is comprised of Materials and Labour, expenses the levels of which are established to a large extent by the market for them and not entirely by intentional efforts of the purchaser.

VOLUME, in any line of business, is a requisite within a certain normal range below which operating efficiency is seriously affected. But increased volume will produce profits in direct relation to the Contribution Margin of each product.

You often hear of savings to be made due to higher volume thus allowing fixed costs to be spread over a greater number of products. This is a fallacy of absorption costing methods. You don't *reduce* costs—you distribute them differently. We have seen in our examples that we always talk about total Fixed Costs — not unit fixed costs. We have seen how all fixed costs must be paid for by the Contribution Margin before any product becomes profitable—then, however, the entire contribution margin becomes profit. Does it make much sense to say you have a profit of so much per unit and then discover you didn't sell enough units to pay for all the Fixed Costs? Or that, as a result, you end up with a large unabsorbed fixed overhead that causes you to show a loss for the period? Some companies and industries have high fixed costs and some low—it's something every management should know about their industry and their own company.

PRICE, the third factor, is far more effective in producing profit, for price changes, like variable cost changes, are reflected directly in profits. Every unit sold has that much additional income, or reduced income.

Pricing is a subject on which we could spend much time. Suffice it to say that competition has much to say about pricing, and so does the consumer. What is the product worth to the consumer? Is it a luxury or a necessity? Is it unique or commonplace? To what degree will pricing action affect volume of sales? What price and volume combination will yield the greatest total profits? I am sure you will find that the effective use of break-even points and the separation of fixed and variable costs in your operation will enable you to assist your management in finding the proper solution to these kinds of problems.

For further reading

WHY NOT USE THE BREAK-EVEN CHART MORE? by K. W. Andrews, N.A.C.A. Bulletin, Feb. 1957.

A PRACTICAL EVALUATION OF BREAK-EVEN ANALYSIS, by Paul Yacobian, N.A.A. Bulletin, Jan. 1959.

THE BREAK-EVEN CHART AS A TOOL FOR MANAGERIAL CONTROL, by R. Parker Eastwood, AMA Production Series No. 186.

FIGURE 7

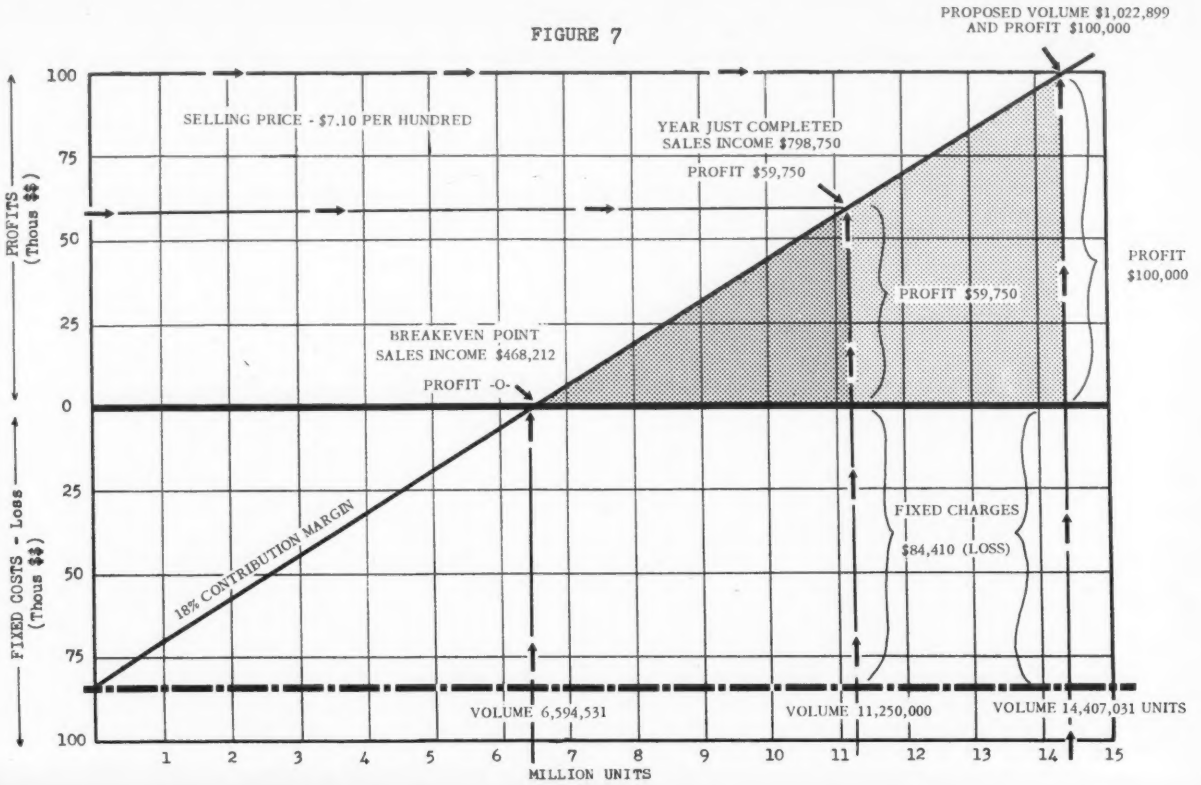


FIGURE 8

Illustrating Reduction In Volume

FIGURE 8

Illustrating Reduction In Volume

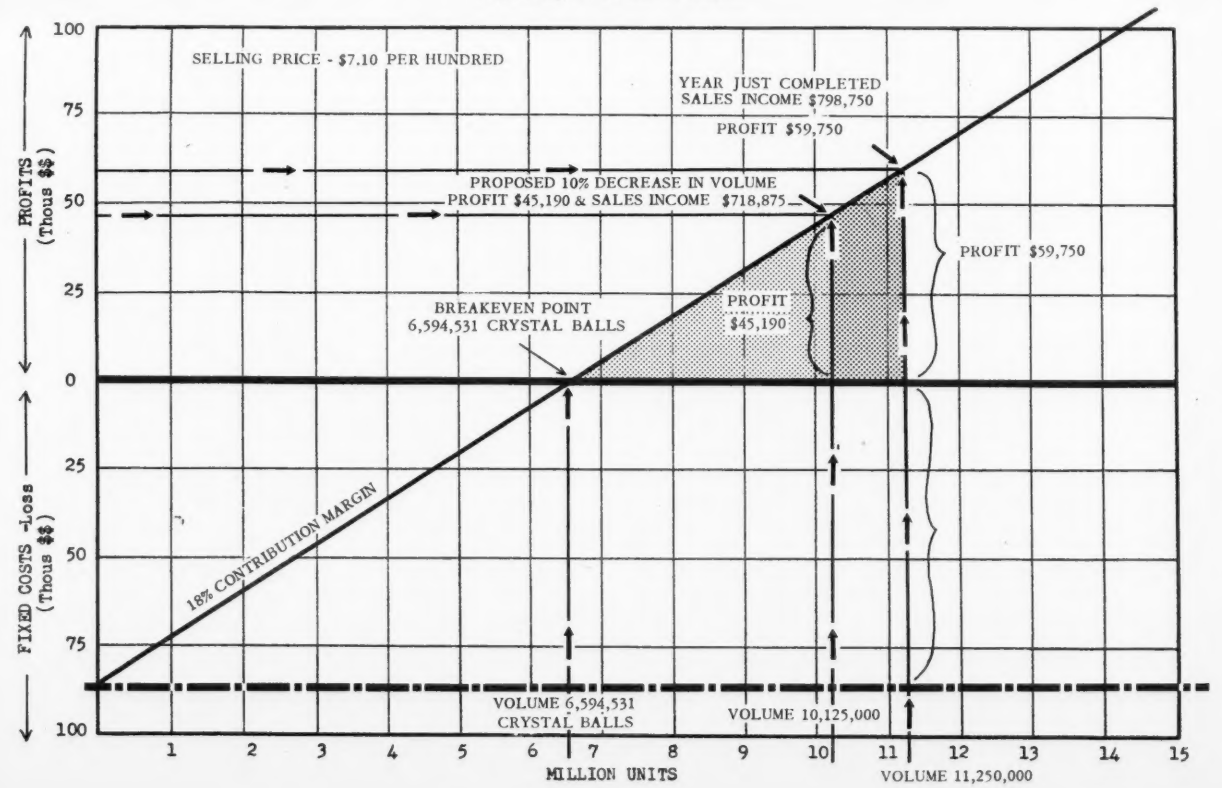


FIGURE 9
Illustrating Reduction In Fixed Costs

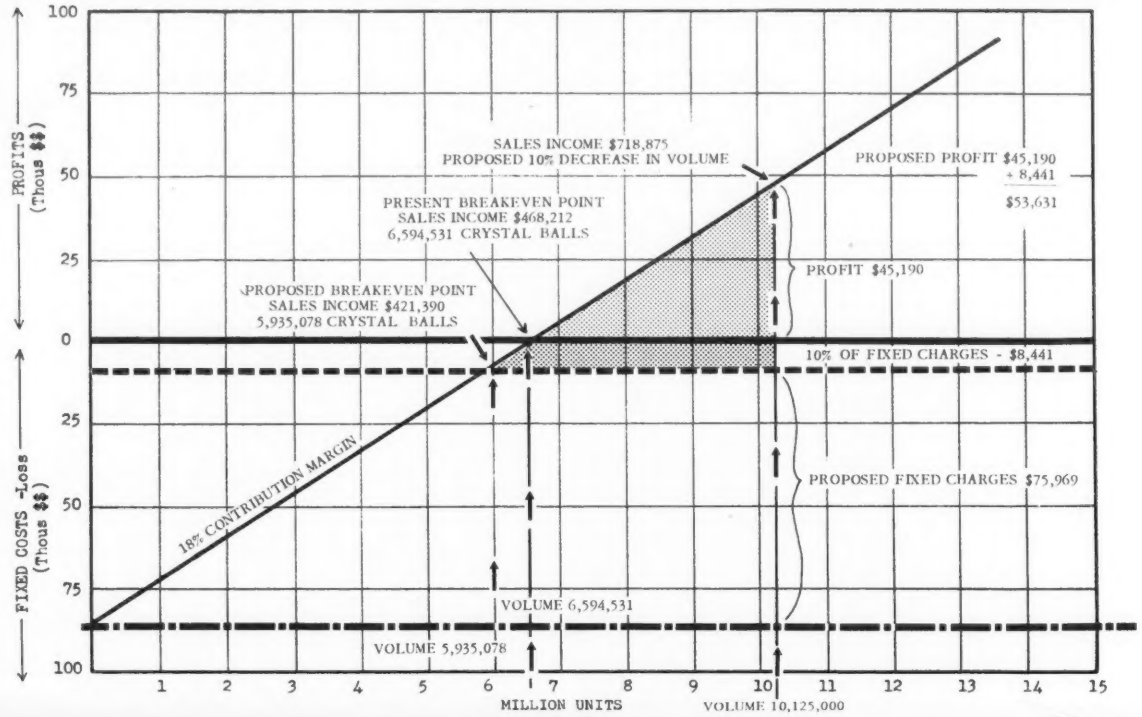


FIGURE 10

FIGURE 10

Illustrating Reduction In Variable Costs

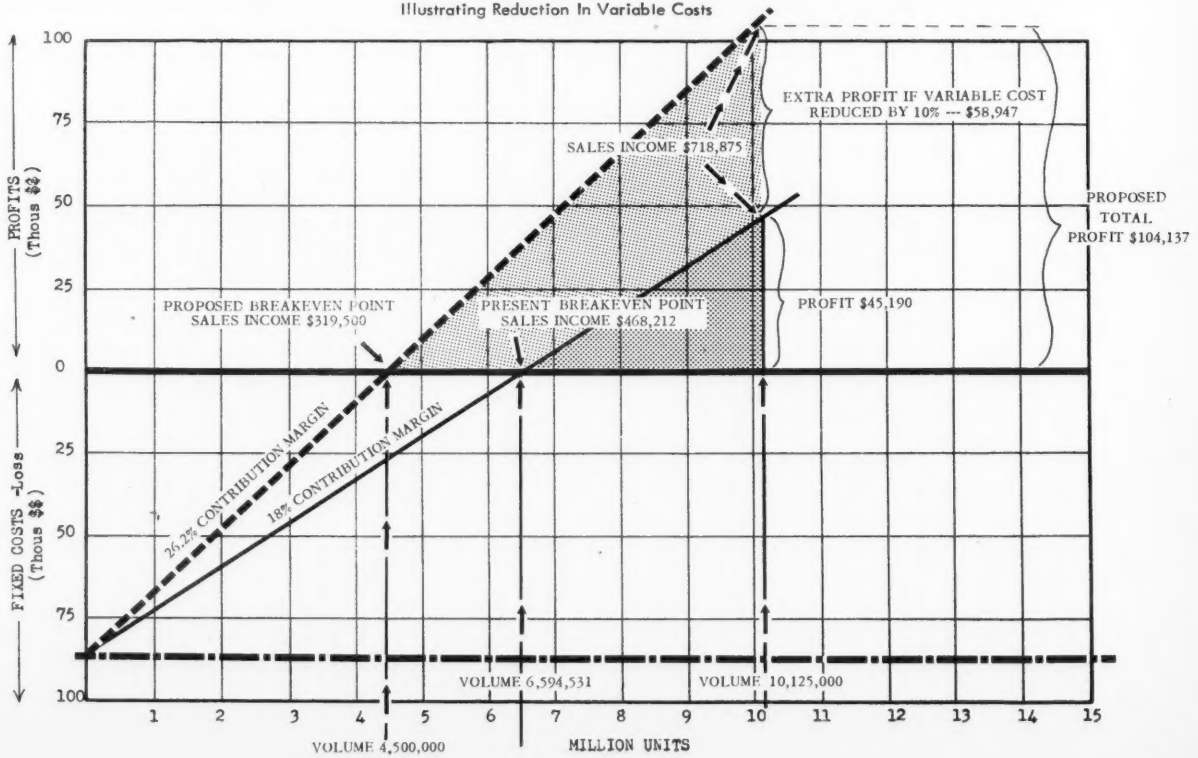


FIGURE 11 Corrected Chart Showing 10% Increase In Labor Costs And 10% Reduction In Fixed Costs Using A Volume Of 10,125,000 Units And Selling Price of $.0710 per Unit

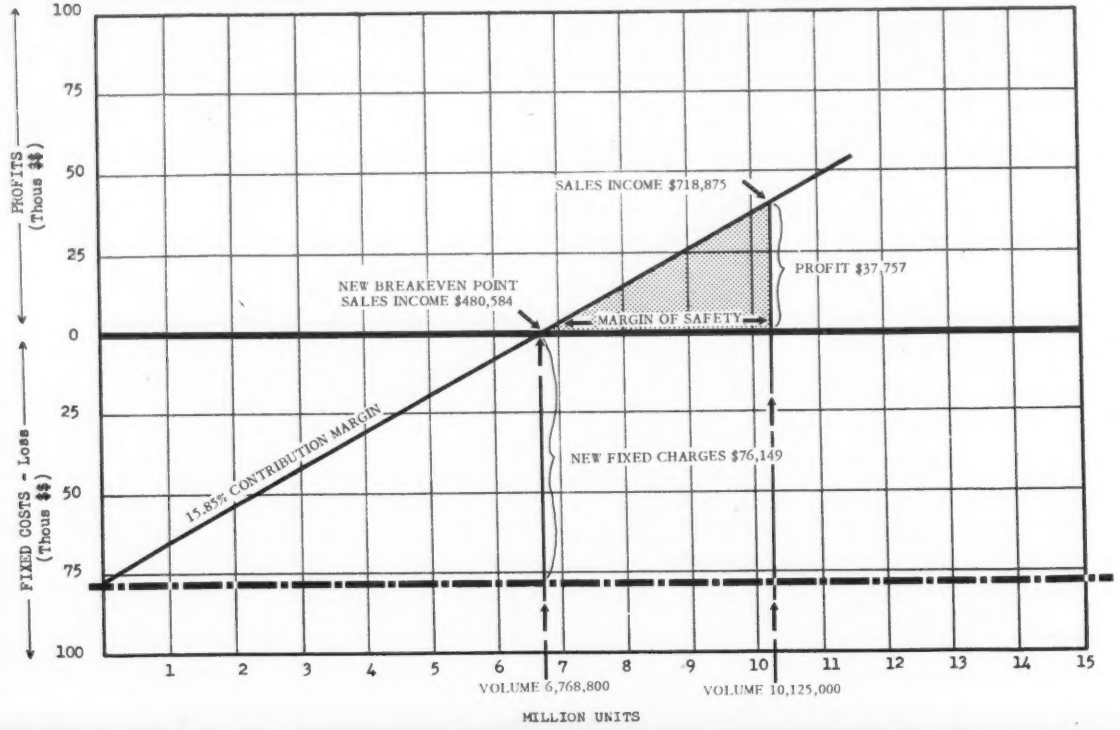


FIGURE 12

FIGURE 12
Showing Price Increase of 8.7%

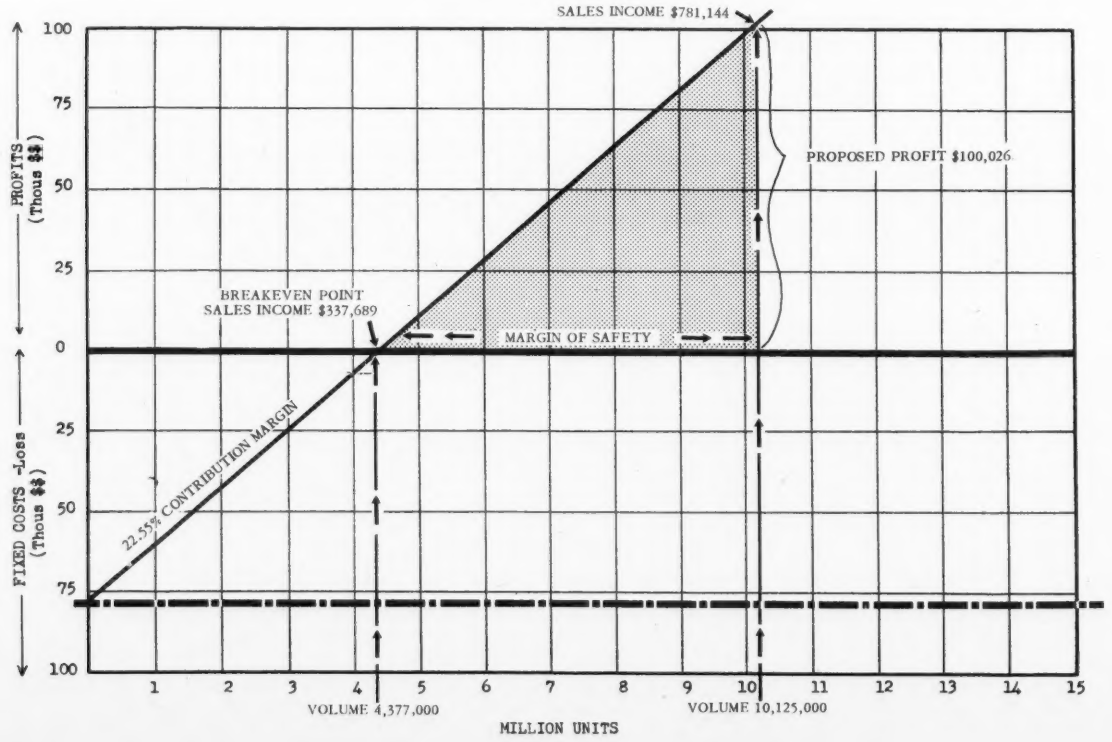
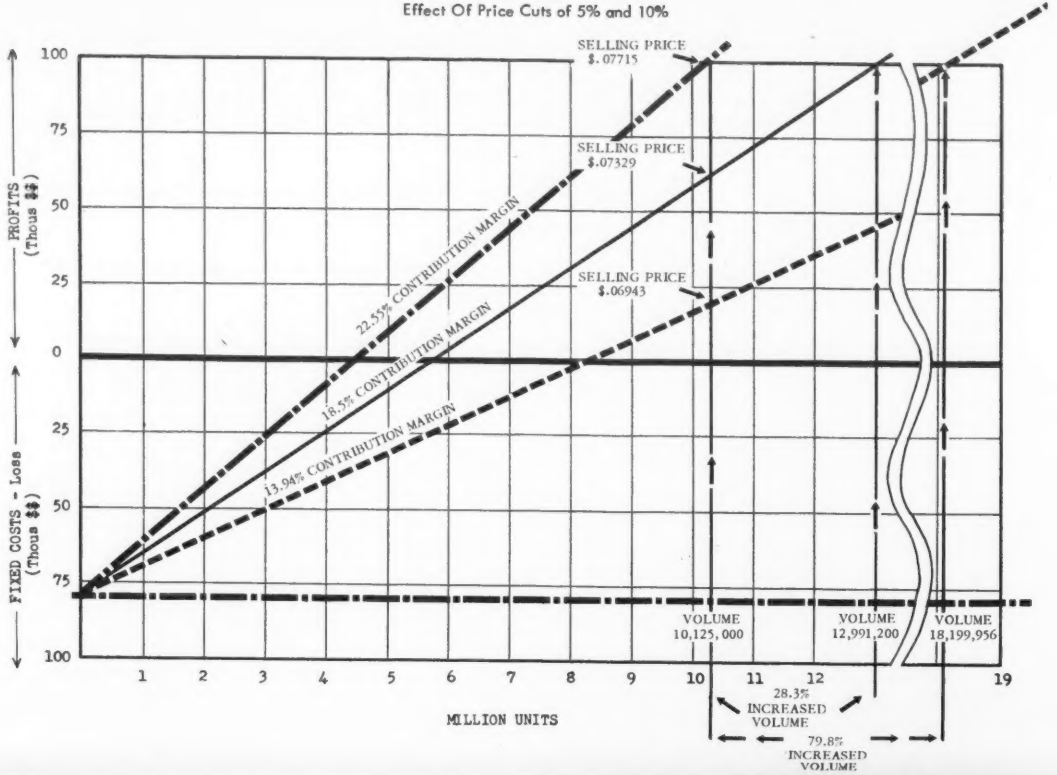
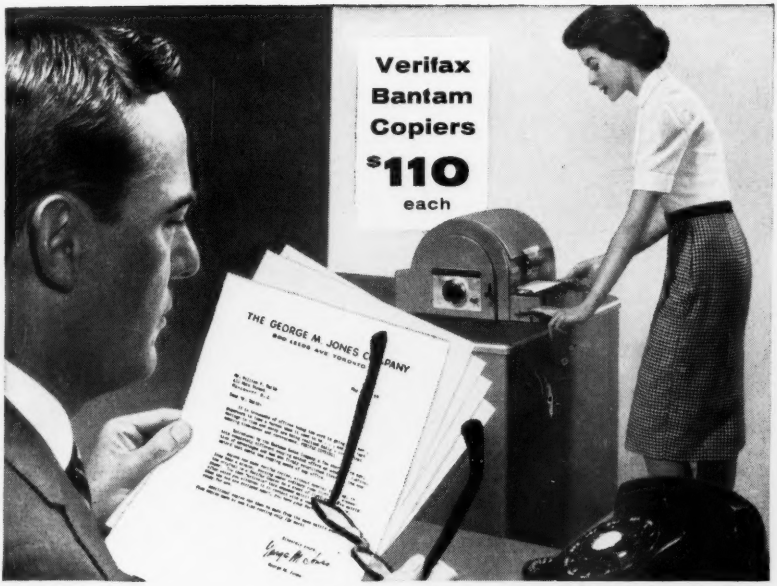


FIGURE 13

Effect Of Price Cuts of 5% and 10%





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TOPICAL

comments *by N. R. Barfoot*

LOOKING AHEAD

Television and document files are to combine forces. In the not too distant future, you will be able to dial a code number and have a document flashed on a T.V. screen.

A television tube that remembers, has been developed. While the recorded picture is being studied by the executive, the camera at the sending station continues to transmit other papers to different receiving stations as requested.

A-Power plant, that is the first full scale one, will probably be built in the Georgian Bay–Lake Huron region. Cold water at the rate of 250,000 gallons per minute is needed for cooling purposes. Proximity to important infeed points is desirable. Scarcity of population is wanted as a safety precaution.

Stereophonic radio may be in operation by year-end in Canada. Problems to be settled are whether AM or FM systems or both will be used. Additional cost to convert a high fidelity radio set to stereophonic sound is $150 - $200. Present receivers will not be useless since they will still pick up manual sound.

ON THE PERSONAL SIDE

Smoking habits vary. The American smokes about 62% of his cigarette, the Canadian 68% and the Briton 73%.

The British Medical Journal suggests these extra puffs on the part of Canadians increase the likelihood of lung cancer. The smoke from the last part of the cigarette is far richer in tars and nicotines which contain the activating elements for carcinoma.

Executive leisure time is always a good subject. A recent survey shows that the battle lines are drawn between the typical (middle age) executive who still holds to his traditional right to work harder and spends longer hours at his job than anyone does, and the newer group who reason that the executive owes himself some time for personal profit, pleasures or personal recreation.

Statistics from the survey show—

- time spent in the office averaged 43 hours per week.
- time spent at home doing paper work, business reading and so forth—7 hours per week.
- business entertaining at home and outside—5 hours per week.
- time travelling to and from the office—5 hours per week.

  Business travel may run as high as 30 hours per week but an average is 6½ per week.

There we have a grand total of 66 - 70 hours per week on direct and allied phases of business.

Other activities are accounted in the following ways—

- civic and political duties—2.4 hours.
- literary and cultural activities including good reading—5.2.
- hobbies, T.V., movies, visiting, etc.—21.8.
- study to further career—3.5.
- church activities—2.1.

Well, there you are. If you consider yourself an executive, add up your own work and leisure load and see if you conform (dreadful word) to the executive profile drawn above.

Lightscaping is a newish term to describe outdoor home lighting. New weatherproof equipment allows you to floodlight, unobtrusively, the house entrance, driveway and favourite spots—a flower bed, statuary, a graceful tree—the year round.

It makes steps and paths safer and discourages prowlers. Coloured lamps are available, but use with caution or the property will look like a perennial Christmas tree. You can spend anything from a few hundred to a few thousand dollars, depending on whether you want remote control circuits with dimming equipment or simple snap switches.

OF GENERAL INTEREST

The first ten manufacturing areas in Canada last year ranged from Montreal with $4 billion output through Toronto (3), Hamilton (1), Vancouver (1), Windsor (.5), Winnipeg (.5), Edmonton (.35) and London, Kitchener and Quebec very close together.

Overstaffed by 50% is the word of an expert on most offices. It isn't a question of methods so much as too much wandering around, gossiping, private 'phone calls, too much time in washrooms before starting and too long with coffee breaks. If a real day's work occurs by some accident, everyone is worn out and quite irritable over the injustice of it all.

Good supervision is the answer. Most clerks and stenos pace themselves strictly by the work ahead or what can be deferred rather than keep up production at a normally good rate.

The chemical industry has doubled its output in the last eight years to a gross sales value of $1.3 billion last year.

There are 1,145 plants employing 56,000 people engaged in manufacturing soaps, paints, gases, pharmaceuticals, toilet preparations, plastics, oils, inks, etc.

Statistics are applied to everything these days. Did you know that the average employee, in industry accounts for $16,000 worth of assets and $20,000 in sales?

Industry groupings show a high of assets ($48,000) and sales ($42,000) for the petrochemical group.

The leather industry is low with assets of $5,000 and sales of $9,000 per employee.

The greatest disparity between these two factors is found in the food products grouping where sales ($28,800) are more than twice as much as assets ($12,600) per worker.

Only four industries—petroleum, tobacco, lumber and wood and primary metals—show a higher investment per employee than sales.

Paper and stone, clay and glass show a capitalization roughly equal to sales generated.

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THE MANAGEMENT APPROACH TO INTEGRATED DATA PROCESSING

By Harvey W. Protzel,
District Supervisor, Data Processing, Southwestern District,
Ernst & Ernst,
St. Louis, Missouri.

It is not advisable to rush headlong into I.D.P., the author warns. Success will be assured only if the integrated data processing program is organized, implemented and controlled properly. In this article, he outlines the factors which must be considered for a successful and profitable I.D.P. application.

THE TERM "Integrated Data Processing" first became nationally prominent at a meeting of the American Management Association in New York City, February 1954.

The enthusiasm of the 1,600 persons from all over the United States who crowded the Hotel Astor Auditorium could be increasingly sensed as each presentation was made and imaginations were awakened.

It was pointed out at the meeting that management decisions and planning based upon company activity and experience must be made more expeditiously. Consequently, required reports and records have to be made available in a more timely manner.

Discussions revealed that many companies have attacked this ever increasing problem by tightening schedules, redesigning forms, and mechanizing procedures as they applied to certain areas or functions. Although these efforts were productive, it became evident that only integration between areas, functions, and work phases would accomplish the optimum results.

Therefore, since all data which is processed within a company has a point of origin, the obvious solution seemed to be to capture the data at its inception in a form which could be used to activate all further processing mechanically.

In an effort to achieve this type of mechanical integration of data, one very large company had succeeded in bringing together a number of office machine manufacturers and the common language, by means of paper tape in-put and out-put, was adopted to link together heretofore incompatable pieces of equipment. That is, at the time the first document was prepared on a machine, a tape was to be produced which would become a source of data in-put for subsequent machine operations, thereby, eliminating repeated manual recordings.

THE PAUSE AND THE PROBLEMS

From the response which I observed while attending that meeting, it seems safe

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Mr. Protzel is a graduate of Washington University, where he majored in Accounting. He was associated with International Business Machines until 1941 and, before and after his service in the Air Corps, was employed by various firms to design and install their data processing systems. He has been with Ernst & Ernst since 1952 as Southwestern District Supervisor of Office Technique and Methods and assisting in the direction of a staff of specialists in management consultant work. He is a Past President of the St. Louis chapter of the National Machine Accountants Association and a Past National Director of that organization. He is also a member of the Institute of Internal Auditors and of the National Office Management Association.

to assume that most of the persons who witnessed this innovation in thinking went back to their respective employers fired with ambition. Fortunately, for most concerned, it was not possible to jump headlong into I.D.P. for they quickly discovered that many machines presented at the meeting were not as yet in production. It was also discovered by some of the smaller companies that the estimated costs of some of the equipment to be produced could not be justified.

This realization was all that was necessary to point out to astute people that they may not know for sure what they were contemplating. Many companies decided it might be better to observe actual experiences of other companies and be in a position to profit from their mistakes before taking any positive action.

In the years that have followed a multitude of brochures, advertisements and misconceptions have helped to confuse the I.D.P. picture as follows:

1. Many manufacturers have portrayed systems based upon the use of their equipment. After digesting a number of these the logical question was, "which would be the best for us?" Each picture and accompanying sales pitch only made the answer to this question harder to find.

2. Many persons acquired the idea that I.D.P. was based upon the utilization of electronic equipment. That is, I.D.P. and E.D.P. were thought to be one and the same.

3. Articles were written and speeches were made which resulted in further confusion. Some were presented as factual experiences with advantages and savings outlined in detail while actually they were only in the preparatory stages. Others pointed out the many stumbling blocks and problems from actual experiences.

Today if a company acknowledges the need for an I.D.P. program, success will be assured if the program is organized, implemented, and controlled properly.

MANAGEMENT MUST BE SOLD AND MUST SELL

Top management must sell itself first. It must understand the basic concept of I.D.P. and predetermine tentatively what it hopes to gain. It must decide that personalities and the reasons for the present methods will not be permitted to influence changes which can be beneficial to the company. It must decide to stand behind the program 100% and make this known to all personnel. Employees must be informed that complete co-operation is mandatory for the success of an I.D.P. program and that nothing less will be tolerated.

Unless these prerequisites are met sincerely and confidently, a general, company-wide I.D.P. program should not be undertaken.

I.D.P. SHOULD FACILITATE MANAGEMENT'S REQUIREMENTS

Today you encounter many definitions of I.D.P., most of which are concerned with the use of the common language tape and/or the equipment aspect. If a company is to derive maximum benefits from an I.D.P. program, the proper concept is necessary at the outset. The definition or concept which I believe has the most to offer is as follows:

> "Integrated data processing is the effective production of a co-ordinated and uninterrupted flow of essential data needed by management in its decision-making through the systematic organization of all related clerical functions."

In other words, minimize paper work and record-keeping functions to reduce operating expenses and processing time, but always base these actions upon management requirements.

I.D.P. should be installed so that management decisions produce a chain reaction of related activities, each function being carried out in a predetermined manner as prescribed by procedure and resulting in reports which management can use to evaluate its previous decisions and make further decisions.

In this manner management can control, in effect, the detailed operations of the company without having to observe personally each employee's daily activities.

Clerical savings are worth while and I.D.P. certainly has much to offer in that respect, but its primary purpose should be to supply management with the tools needed to direct the operations of the company intelligently.

I.D.P., if properly installed, can insure management against deviations from procedure. Integration of all related processing makes each function dependent upon the proper fulfillment of the responsibilities of the previous functions. Deviation from prescribed procedure will remove a link from the chain and, as a result, the chain will be broken. From that point on, all remaining links will be separated and the awaited results will not be forthcoming.

Since a situation such as this could not continue unnoticed for any great length of time, management may be reasonably assured of proper processing when it is receiving the required results.

RESPONSIBILITY FOR I.D.P. PROGRAM

Since I.D.P. is primarily a tool to serve management, required studies, evaluations, and implementation should be accomplished by management.

Naturally, it would not be practical or wise for the general manager and his top line of executives to study jointly the detailed operations of the various company functions. It would not be wise either to decentralize the program by permitting each executive to study his own division and then attempt to integrate by holding joint meetings of the executives. Such an attempt could not be accomplished successfully even if each man were completely unbiased concerning his own division.

Then how does management assume the responsibility of the I.D.P. program? One person should be appointed responsible for the detailed surveys and to prepare recommendations for management's approval. This same person would control the implementation.

In order for this individual to function as required, he must be placed at the proper organizational level. He must be able, without question or opposition, to cross organizational lines. His position must also be such that no divisional executive could unduly persuade or intimidate him. He should be made answerable only to the general manager.

QUALIFICATIONS OF THE I.D.P. DIRECTOR

This man should be of management calibre, familiar with all facets of the business and the part each activity plays in the overall picture.

He must be able to evaluate each observation from a management point of view. The solutions to individual problems must be recommended only after studying their effect upon the overall picture which, in essence, is the management point of view. He must possess the type of executive thinking that would not permit him to recom-

mend clerical dollar savings if the results might deprive management of necessary information. He must be able to divorce himself completely from any biased opinions which he might have accumulated by having spent a considerable amount of time in any one division of activity. He should be familiar with all types of mechanical, electrical, and electronic office devices and paper work processing techniques. He must be familiar with the basic requirements for adequate internal control.

Naturally, it would not be easy to find a man to fit this description. As a matter of fact there probably are not too many general managers that could.

A number of companies meet this problem by selecting a potential I.D.P. director and engaging a management consulting firm to supplement the areas wherein he might be lacking.

ORGANIZATION REQUIREMENTS

A good functional organization chart is important for a successful business venture, no matter what methods of processing are employed.

Since the very nature of I.D.P. is to devise systems which disregard organizational lines and destroy "little kingdoms," it becomes most essential that each responsibility be pointed out in order to avoid misunderstandings and duplications.

Consequently, the program will encounter fewer stumbling blocks if the functional organization chart is reviewed, revised when found advisable, and the responsibilities and authority of each department spelled out.

Job descriptions may be prepared in rough form at least, but it might be inadvisable to formalize them as many will change.

OVERALL APPROACH

The overall approach to I.D.P. is essential. Though it may not be practical or even possible to install an entire system at one time, plans should be made to complete the integration of all related functions before any installations are made. This is very important if revisions of recent revisions are to be avoided.

The I.D.P. director should study all paper work, records, and reports used throughout the company to determine their relationship before giving any consideration to the possibility of improvements.

During this study he will observe areas where inconsistencies and duplications exist. He will recognize inadequacies in internal control. He may find management reports that are being produced too late or do not contain enough information for maximum effectiveness. He may find records or reports that might be eliminated or reduced without detriment.

These observations and his recommendations for further detailed studies should be discussed with management who should then determine which area appears to need I.D.P. the most.

CONCENTRATING THE PROGRAM

When this decision has been made, the I.D.P. director should first record the functions of the department selected and all related functions. The use of flow charts would be exceptionally helpful for this purpose.

He should get samples of all reports and records and tie into each the source documents from which information is recorded. He should also record the distribution and ultimate use of each report and record.

At this point, the value of all reports and records to management should be studied. To find quicker and less expensive methods of producing records and reports is naturally very advantageous and this is one of the main objectives of I.D.P.; but, the information contained in the records and reports is the reason for incurring the expense of maintaining them. Consequently, before the data which ultimately produces them is integrated, they should be revised wherever and however advisable to serve management best. It will undoubtedly be found that management's desires and needs were not being completely fulfilled because of the limitations of the present methods. The reasons surrounding these limitations should be cast aside and the attitude of "whatever is needed we can get" should be adopted. Management's long range plans and goals should be considered. To do otherwise, is merely to plan obsolescence.

It may later be found that everything requested by or needed for management cannot be obtained exactly as prescribed and compromises may be necessary. Compromises should be made only after all efforts have been expended.

INTEGRATING THE PROCESSING OF DATA

When the final goals have been determined, the objective is then to get the information or data from the originating documents to these goals as quickly and as inexpensively as possible.

Too many discussion of I.D.P. have stressed the hardware involved. Systems have been developed specifically to utilize certain types of equipment. Too often reports and records have been limited owing to the limitations of the equipment adopted. An I.D.P. study should not be made with preconceived ideas about what machines should be used.

A company does not decide what kind of equipment it would like in its factory and then produce the finished products in the best manner which the equipment will permit. The items that are going to be made are designed exactly the way they are wanted and then the machines that will do the job are obtained.

The office should not be considered any differently than the factory. The finished products should be decided upon and the production process should be that which is best suited to accomplish the purpose. Any machines used should be selected to facilitate the requirements of the processing of data in order to arrive at the desired results.

It should not be necessary to confine procedures entirely to the ramifications of equipment now on the market. Most manufacturers are willing to work with you to adjust their standard machines to your job needs. The new features you may request would be available to increase their future sales.

As previously stated, I.D.P. was originally presented as complete mechanization with the common language paper tapes linking one machine process to another. This type of thinking should be adjusted so that machines are used only when they are justified. Nothing should be put on machines just for the sake of mechanization. There are many procedures or portions of a system that would serve management better if accomplished manually. In a company in which service to the customer is of prime importance, the mechanization of order writing could conceivably result in lengthening the time between the receipt of the order and its release to the warehouse. This increase in processing time could result in customers turning to competitors for better service. If punched cards are to be used for sales statistics and accounts

receivable, it might still be best to send the order to the warehouse as it was received and create punched cards after shipment even though it would appear most logical to use the cards for every possible purpose. Complete integration should be a company's goal but this does not depend upon complete mechanization. It has been discovered and proven many times that savings derived from a machine application might have been equally possible through a change in the manual method.

Actually, a small company has much to gain from an I.D.P. program even if no machines are used. One small company headed in this direction by making its bills of lading a part of the order set. This minor improvement saved the clerical expense of one person, a substantial saving to the company. Other similar clerical changes added welcome dollars to its profit picture. The fact that it could not afford an elaborate machine processing system did not discourage the company from applying the principles of I.D.P. to its business. Percentagewise the savings were as great to the company as an electronic computer would produce for a larger company.

Not much has been said yet about types of machines or systems. The machines used and the method employed are merely a matter of comparing costs and time factors and deciding which will best produce the desired results. The main point to remember is that machines and methods are of secondary importance to management's needs. No I.D.P. tool has ever been produced which could be considered a cure-all for a bad system, poor supervision, poor planning, or bad judgment. Nothing has been conceived which will replace the need for human decision making and direct action. Only a sound approach based upon thorough investigation and well tested programming will produce the results desired in actual practice.

THE NEED FOR PROCEDURE MANUALS

Procedure or operating manuals are essential. When a system is established within a department so that it can be controlled completely by the department, the value of detailed operating manuals may be questioned. But, with I.D.P. no process is ever begun and completed in such a small operating area. And, since organizational lines are crossed and each function is dependent upon the accuracy of the previous functions, procedure manuals become vital if the system is to be carried out smoothly. When the manual has been prepared, an educational program should be devised.

A complete manual should be prepared for each affected department. Each individual employee should receive the operational sections pertaining to his work.

After a short period of time has elapsed in which the procedure manuals are to be studied, meetings should be scheduled to answer employees' questions. While the new methods are being installed, the procedure manual in the hands of each employee will prove a ready reference and time saver and will also minimize the number of incorrect actions possible at the inception of a new procedure.

Whenever procedure changes are contemplated, reference to operating manuals will assure that all pertinent points are given due consideration.

ADEQUATE FINANCING

After spending a considerable amount of money on studies, procedure development, and implementation, many companies are reluctant to provide funds for keeping the systems up-to-date and modern.

I.D.P. is no different than other systems in this respect. There must be constant

policing, testing, and re-evaluating of procedures and results. The best-installed system may become obsolete as better equipment becomes available; as competitors' methods change; or for many other reasons. Constant vigilance alone can keep the I.D.P. systems producing maximum results for the company. If not kept up-to-date, the fine, modern systems being installed will eventually be no better than the ones being replaced.

Management should provide an adequate budget and personnel to maintain the I.D.P. systems at a level of performance equal to that which is expected of the factory.

I.D.P. RECIPE

In closing, here in lighter, condensed form is a recipe for I.D.P.

1. Take source data, record keeping and report requirements.
2. Add company policies, objectives and philosophies.
3. Work in forms design and equipment applications with generous quantities of common sense and ingenuity.
4. Pour into appropriate departments while maintaining co-ordinated control requirements.
5. Cover with maximum co-operation.

If this recipe is followed closely, the resulting profits should adequately serve all stockholders—and we hope the cook too!

For further reading

WORK SIMPLIFICATION THROUGH DATA-PROCESSING EQUIPMENT, by F. H. Fritz, Cost and Management, Sept. 1958.

INTEGRATED DATA PROCESSING—A CASE HISTORY, by A. A. Mackay, The Canadian Chartered Accountant, March 1957.

INTEGRATED DATA PROCESSING, by H. S. Brown, Cost and Management, Sept. 1956.

The Economic SCENE . . .

by W. Allan Beckett

THE HIGH COST OF MONEY

DURING the past summer, Canadian interest rates soared to unprecedented heights. The most representative short term rate, the yield on Government of Canada three-month Treasury Bills, reached a record 6.16% on August 13. By the end of the month this rate had been pushed down to 5.33%. By now, October, it is probable that the rate will be close to 5.5%, high by any historical standard and sharply above the recession low of 0.87% on July 31, 1958.

These developments were accompanied by a spate of conflicting statements, claims and counterclaims, that could serve to produce only confusion in the public mind. The Bank of Canada was accused of driving interest rates up; the government was applauded for driving them back down. The chartered banks were said to be trying to put one over on the public, while public demand for borrowed funds was held responsible for rising interest rates.

It seems appropriate, then, to inquire into the significance of the level of interest rates. What makes them go up and down? What effect do these changes have on the course of general business activity?

The Treasury Bill yield is determined in a competitive market, albeit not a perfect one. Each Thursday the federal government offers for competitive bidding some $115 - $135 million of treasury bills with a maturity of 91 days. Since May 7, the treasury has also offered some $20 million of 182-day bills. Each Thursday of course, a similar amount of bills matures and is paid off. The government thus has an obligation of between $1.5 billion and $2.0 billion outstanding at any time. If it wishes to step up its borrowing, it offers more bills than are maturing. Similarly, it may reduce its obligations by offering a lesser amount than that maturing. Thus the supply of Treasury Bills is conditioned in part by the government's need for short term funds.

The demand side of the market is a little more complicated. The bills are sold by tender to the chartered banks, a group of investment dealers and the Bank of Canada itself. The motives behind the purchase of bills are different in each case. The chartered banks have two reasons. The first, obviously, is to make a profit by lending depositors' funds at the most attractive rate. Second, the banks have agreed to hold a certain part of their reserves, their so-called secondary reserves, in the form of treasury bills and other government securities maturing within two years. Short term assets are reasonably liquid and can be converted quickly into cash if the banks require it for either loan purposes or to maintain the legally required cash reserve ratio. Such assets can be sold in the short term money market before maturity if this step is desirable.

The investment dealers participate primarily from a profit-making viewpoint, although they also provide the framework for the market in which the banks and other financial institutions participate. The Bank of Canada participates as the fiscal and

monetary agent of the government and uses its Treasury Bill operations as one means of influencing the money supply in the interests of economic policy. If the Bank wishes to expand the money supply to promote recovery, as it did in early 1958, it will purchase securities from the chartered banks and the public. This bids up prices and lowers yields. If on the other hand, the Bank wishes to check the growth in the money supply to combat inflation, as it has been doing recently, it will sell bonds. This lowers their prices and increases their yields.

We are now in a position to see what has happened to drive Treasury Bill yields and related interests rates so high. In the year ended July 29, 1959 the supply of Bills expanded by $500 million, and all of the increase took place since the beginning of this year. The Bank of Canada reduced its holdings by about $85 million, the chartered banks holdings were unchanged, and the general public (mostly financial institutions other than banks) took up the slack by purchasing net, some $570 millions of bills. Since the beginning of 1959, the Bank of Canada bought about $250 million of the new bills and the general public bought the remaining $300-odd million. In short, the supply of bills increased, the price went down and the yield rose.

When the yield exceeded six per cent, the statutory maximum that the chartered banks can charge on loans, the treasury restricted the supply sufficiently to raise the price and lower the yield.

At the same time, the demand for bills, especially from the chartered banks, had not risen commensurately with the increased supply. The money supply has not increased significantly for a year and the banks did not need to purchase bills to maintain their secondary reserves. Moreover, the demand for loans, particularly by individuals and merchandizers, grew rapidly this year, providing a profitable outlet for bank funds. When the Treasury Bill yield went above six per cent, the banks did not try to put one over. They were simply wise businessmen, investing their money at 6.16% by lending it to the government rather than to you or me at six per cent.

One final comment should be made to clear up misconceptions regarding the Bank Rate. The Bank of Canada is often accused of setting the Rate, sometimes for political purpose. At least, the Bank is said to have some control and uses the Rate to indicate its thinking. This has seldom been true, and has had no basis in fact at all since 1956. The Bank Rate is set at .25% above the Treasury Bill yield, and is nothing more than a reflection of that market. Moreover, as the Rate which the Bank of Canada charges for loans to the chartered banks, it is seldom operative in practice, since the banks do not, except on very rare occasions, borrow from the Central Bank. The Bank Rate is not and has never been an effective instrument of monetary policy in Canada.

Rather, the Bank of Canada operates through its market transactions to augment or restrict the growth in the money supply. So far in 1959, it has operated to restrain expansion on the grounds that there is an inflationary potential in the months and years ahead. The business expansion has been moderate to date, in part a reflection of the Bank's policies. Time will tell whether the degree of monetary restraint has been just enough to maintain a steady prosperity, or too severe. If the latter is true, prosperity will vanish along with the fear of inflation.

FORECASTING AS A LINE FUNCTION

By C. H. Hutchinson,
Supervisor, Financial Planning & Reporting,
Minneapolis-Honeywell Regulator Co.,
Minneapolis, Minnesota.

"Before the fact" control became a reality for this organization which assigns the preparation of forecasts to line personnel. Though final responsibility rests with management, the people who do the actual spending are in an admirable position to provide detailed, accurate forecasts geared to provide tighter control, better reporting and communications and rapid remedial action.

THE growing popularity of forecasting as a means of profit control has introduced a wide variety of techniques for accomplishing the job. Some firms are developing highly technical approaches designed to give proper weight to a multitude of determining factors. Others have kept the forecasting function mechanically simple and the amount of detail included at a minimum.

In our organization (a product group consisting of several operating divisions), the immediate emphasis was put on the choice of forecasters. Refinements in accounting and forecasting techniques followed. The forecasts forming the basis of our financial planning and reporting program differ in two important respects from the more usual forecast: (1) they are prepared by line personnel rather than by management and staff accountants and (2) they are prepared in considerably more detail than the usual "topside" or staff-prepared forecast. Obviously, management cannot relinquish its responsibility for the overall plan that results, but shifting the actual workload to the people who do the spending will pay off in terms of greater control.

The increased control, which stems directly from these two distinguishing features, is enjoyed both before and during the operating period for which the forecasts are prepared. In the planning period that precedes the operating period, line personnel —department heads and factory foremen—formalize, through forecasts, their future operating plans. Translating their operating plans into dollars of cost results in examination and reconcilement of discrepancies that may not have become apparent in less formalized planning. The distribution, by means of these plans, of many bits of information about the future, coming from many knowledgeable sources, means that each echelon of management is now better informed about the "known" areas of the future.

Composite plans are evaluated and the less desirable aspects are corrected by getting at the cause. This is accounting and control "before the fact" which is not possible to the same degree in an environment of "topside" forecasts where management fails to poll thoroughly the people who do the actual spending.

Clarence H. Hutchinson is a graduate of Harvard College. He later attended the Graduate Schools of Business Administration of Columbia and Harvard Universities, obtaining his MBA from Harvard in 1955. While he was a part time student at Columbia, he was employed in the Order-Service Department of the General Electric Company. Upon graduating from Harvard, he joined Minneapolis-Honeywell and is now Supervisor of Financial Planning & Reporting there. A member of the National Association of Accountants, he addressed their 1957 Fall Seminar at the University of Minnesota on the subject of forecasting.

Then in the operating period itself, deviations from plans in any one month can be precisely identified as to the spender and to the item spent. This precise knowledge is an important prerequisite to taking corrective action that may be required to return operations to their planned course in subsequent months.

MECHANICS OF OUR PROGRAM

The planning and reporting cycle consists of six steps: (1) preparing the sales volume forecast, (2) setting a management profit target, (3) gathering and compiling the cost forecasts of the individual departments, (4) reviewing and revising the composite forecast, (5) publishing and distributing the approved plan and (6) reporting actuals against plans.

1. Preparing the Sales Volume Forecast

The sales volume forecasts are prepared by the sales divisions who look to the market research department and to their own field organizations for assistance. Sales forecasting, which forms the basis for production scheduling, is obviously a continual process. The sales volume forecast submitted for the purpose of compiling an annual profit plan merely reflects the most current thinking at the time the plan is being prepared.

2. Setting a Management Profit Target

Starting with this sales volume plan, "topside" profit and loss forecast is prepared by accounting department personnel. In its final approval version, it constitutes the management profit target. This target, which in many firms would represent the final forecast, is, in our organization, only an intermediate instrument. It establishes a climate for the coming round of detailed cost and expense forecasting and will be used as a guide in evaluating the composite of line forecasts so obtained.

3. Gathering and Compiling Departmental Cost Forecasts

Sales volume forecasts are announced and cost forecasts are gathered from operating departments and consolidated by accountants into one aggregate profit and loss plan. In preparing departmental forecasts, past records are, of course, a valuable tool to the individual manager. However, he tempers his projection of historical trends with specific knowledge and judgments he holds about the future. Once the plan is completed, historical data become relatively unimportant management tools. The plan—based both on history and on judgment—should be a better measuring stick for the future. In an organization experiencing rapid growth and change, the superiority of a plan which has allowed for these changes, as opposed to simple history, is especially apparent.

4. Reviewing and Revising the Composite Plan

Departmental plans are reviewed by succeeding echelons of management throughout the planning process. Finally, the composite forecast and all of its supporting detail are reviewed by division and group managements. The revisions that grow out of this review are the result of negotiations with the forecasters themselves. Thus even in its final form, the forecaster's basic responsibility for his forecast is not changed. This practice stems from the belief that a target for performance improvement will have a much higher chance of success if it is the product of the department head who will ultimately determine that performance.

5. Publishing and Distributing the Approved Plan

Following final approval by management, the financial plan is published in limited detail and distributed among members of management. The plan, which is issued twice a year, takes the form of a "management workbook." Adjacent to each month's plan is a blank column which may be used for inserting actuals as they become available (see Exhibit 1). Thus a manager can see on one page the comparisons of six months' actuals with the plan for a particular cost area.

The plans are arranged in pyramid order starting with a top profit and loss statement and, through referencing, carrying down to the supporting detail. Utimately, every summary or intermediate schedule leads to a detailed departmental forecast carrying the name of the responsible individual.

The following is an abridged version of the plan book table of contents:

SECTION I

Schedule

A	Group Profit and Loss Plans
B	Sales Volume Plans—Summary
B1	Sales Plans—Division X
B2	Sales Plans—Division Y
*	
C	Factory Cost Plans
C1	Standard Cost of Removals
C2	Planned Factory Variance
C3	Shipping Cost Plans
*	
D	Engineering & Research Plans
D1	Engineering Plans—Location #1
*	
E	Selling Expense Plans
*	
F	Administrative Plans
*	

SECTION II

Schedule

A	Profit and Loss Plans—Sales Division X
B	Profit and Loss Plans—Sales Division Y
*	
*	

Recent issues of the plan book have been limited to about 40 plan schedules in addition to a number of historical comparison schedules and graphs of key data. The departmental schedules which are not published are kept on file in the accounting department in worksheet form. Photostatic copies of these worksheets are circulated in limited numbers to members of management directly concerned.

6. Reporting Actuals Against Plans

Summary management reports and departmental reports in detail are issued monthly comparing actuals against plans for the current month and the year to date. The group comptroller's *Letter of Comment* is the primary monthly report. It is a booklet consisting of about 40 pages of schedules, commentary and analysis. Every major cost function is treated in summary form with departmental results shown in total only.

In addition to the comptroller's *Letter,* the accounting organization within each factory issues a monthly factory operating statement in booklet form covering the month's production activities in more detail.

Issued in support of the *Letter* and the factory statements are departmental reports which are distributed to the department heads and their superiors. These reports include the full salary and expense detail behind the department totals shown in the *Letter* and the factory statements.

Important parts of the reporting phase are the review meeting and the accounting contact conferences. A *Letter of Comment* review meeting is held two or three days after publication of the *Letter,* at which time members of sales management discuss the month's results. Similarly, factory management conducts a "Big Picture" meeting in which foremen discuss the month's performance.

Each sales, engineering, administrative and factory department head is interviewed periodically—usually monthly or more often—by members of the accounting department called "contact accountants." They assist the department head in making his personal review of the month's performance.

INSTITUTING THE PROGRAM

Instituting such a planning and reporting program was a major undertaking. The early endorsement of management in general was an immeasurable aid but the program still had to be sold throughout the organization. Two significant problems with which we had to deal and which in some ways are interrelated involve (1) training the forecasters and (2) modifying our own accounting philosophy and technique.

Training the Forecasters

Critics of line forecasting have claimed that department heads and foremen lack the technical accounting background to do a good job of forecasting. We recognized this as a problem but not an insurmountable one. We began by moving slowly and consulting with appropriate operating people frequently. We assigned accounting contact responsibility for specific operating areas to carefully selected members of our accounting staff. Their job was to maintain close liaison with the operating people in their assigned area, to assist them in the mechanics of forecasting and to analyze, distribute and explain accounting reports.

Initially, no formal accounting training program was attempted. Rather, we relied on contact accountants to explain accounting terminology and procedures as specific questions arose.

Several months after embarking on this program, a series of accounting orientation sessions were conducted by accounting management for sales and administrative management. These series covered about 20 hours of instruction over a ten week period. With several months prior exposure to forecasting and accounting problems, the training sessions were enthusiastically received.

Modifying Accounting Philosophy and Techniques

We felt that accounting reports could be simplified without loss in content. In the process of explaining accounting and reporting procedures to operating people we found many ways to improve upon our accounting and reporting methods.

A key issue at all times was the question of responsibility and controllability of costs. We were faced with the problem of putting emphasis on controllable costs but doing so without roaming too far from the basic concepts of full cost reporting.

In some cases we were able to gain acceptance of treating a non-controllable cost as controllable if we froze the uncontrollable variables. This permitted us to approach the level of fuli costs in our reporting yet avoid the confusion that would follow the inclusion of periodic uncontrollable fluctuations. For example, in the case of building occupancy expense, which was an allocation to each department of the total cost of maintaining the buildings, we agreed to charge the department head a fixed rate per square foot per month. Accordingly, the allocation would vary only if there were changes in a department's space requirements, which was considered controllable. The over-under absorption of total building occupancy expense, which fluctuates widely from month to month but is relatively negligible for the year in total, is carried in a miscellaneous management account.

In a similar fashion in the sales and administrative areas we eliminated five items classified as salary fringe expenses (*e.g.*, unemployment and social security taxes) from the departmental statement and in their place charged each department a flat percentage of straight time salaries as a "fringe supplement to salaries." We felt that by treating these fringe costs as a direct function of salary which they are, we would make them more acceptable to the individual department manager. The total amount of these five charges appears in a group management account along with a credit representing the amount absorbed by the departments. This method permits centralized control of these items without ignoring the role played by department heads through their influence on the size of the payroll itself.

For control reporting in the sales and administrative areas we abandoned functional salary account classifications and reported salaries by area of responsibility within each department. For example, in one sales division home office staff, salaries are classified as (a) Administrative, (b) Market 1, (c) Market 2 and etc. Formerly they had been classified as (a) Office, (b) Salesmen, (c) Promotional and Technical, etc., without regard to organizational lines within the department.

Controllable Profit

The internal factory profit control statement deviates from the top management statement in a number of ways. We intended to measure only the factors controlled by factory management. For example, "Sales" were defined as production for the period valued at a standard selling price. This eliminated the production-to-sales time lag and the effects of price changes and customer mix on profits (See Exhibit 2).

Later, in constructing profit statements for sales divisions within the group, we followed the same philosophy of "responsibility reporting." Sales were reported at actual but factory costs were measured at standard. Thus sales division controllable profit is affected by changes in price and in mix but not by changes in factory performance. Factory variances, administrative costs and other cost beyond the control

of sales management were allocated between sales division and brought into the statement near the bottom so that sales division net profits in total agreed with the group net profit reported in the comptroller's *Letter*. But the emphasis on sales division statement was on controllable or "direct" margins rather than on net profits (See Exhibit 3).

RESULTS

Results of this program of detailed line forecasting have been highly favourable. Operating personnel have shown they can do a reliable job of forecasting without extensive backgrounds in accounting. Today, members of middle management demonstrate a greater ability to deal with accounting and financial problems and they are better informed about their own operations and about the group position—both present and future.

Contact accountants have had a broadening experience in being exposed at length to the problems of operating personnel. Accounting department personnel in general have benefitted through the resulting appraisal of their accounting philosophy and techniques.

The concept of responsibility accounting has contributed to improvements in the organizational structure. The forecasting and reporting communications network that has evolved has increased our ability to act rapidly and intelligently. In total, we feel that the basic arguments in favour of line forecasting have very favourably met the test of experience.

SECTION I
SCHEDULE A

GROUP PROFIT AND LOSS STATEMENT
1959 PLAN BY MONTHS

(000's omitted)

	Ref. Sec.I Sch.	January		February		March		June		1st Half Total	2nd Half Total	1959 Total
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual			
Sales (net)	B	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXXXX	$XXXXXXX	$XXXXXXX
Factory cost of sales	C	XXXXX	____	XXXXX	____	XXXXX	____	XXXXX	____	XXXXXXX	XXXXXXX	XXXXXXX
Factory gross profit		$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXXXX	$XXXXXXX	$XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Engineering and research		XXX	.....	XXX	.....	XXX	.....	XXX	.....	XXXXXX	XXXXXX	XXXXXX
Other costs	E	XX	____	XX	____	XX	____	XX	____	XXX	XXX	XXX
Gross profit		$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXXXX	$XXXXXXX	$XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Net selling expense	F	XXXXX	.....	XXXXX	.....	XXXXX	.....	XXXXX	.....	XXXXXXX	XXXXXXX	XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
G & A expense allocated	G	XXX	.....	XXX	.....	XXX	.....	XXX	.....	XXXXXX	XXXXXX	XXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Total operating expense		$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXXXX	$XXXXXXX	$XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Net operating profit		XXXXX	.....	XXXXX	.....	XXXXX	.....	XXXXX	.....	XXXXXXX	XXXXXXX	XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Other income	H	XX*	____	XX*	____	X*	____	XX*	____	XXX*	XXX*	XXX*
Profit before state and Federal taxes		$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXX	.....	$XXXXXXX	$XXXXXXX	$XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%
Provision for state taxes		XX	____	XX	____	XX	____	XX	____	XXX	XXX	XXX
Profit before Federal taxes		$XXXXX	____	$XXXXX	____	$XXXXX	____	$XXXXX	____	$XXXXXXX	$XXXXXXX	$XXXXXXX
Percent of sales		X%		X%		X%		X%		X%	X%	X%

* Denotes credit

Exhibit 1

EXHIBIT 2

PLANT A
Factory Operating Statement
Month of December 1958

	PLAN	ACTUAL
FACTORY SALES	.....	.....
Direct labour		
Labour input		
Change in labour in process	.....	.....
Labour content of sales	.....	.....
% of sales		
Factory burden		
Direct department burden labour		
Direct department supplies and expense		
Direct department fixed charges		
Indirect department	.....	.....
Total burden input		
Change in burden in process	.....	.....
Burden content of sales		
% of sales		
Material content of sales	.....	.....
% of sales		
TOTAL FACTORY COST OF SALES	.....	.....
FACTORY PROFIT		
% of sales		

EXHIBIT 3

SALES DIVISION X
Profit and Loss Statement
Six Months Ended June 30, 1958

	PLAN	ACTUAL
NET SALES	.....	.....
COST OF SALES		
Product cost at standard		
Service and repair costs	.....	.....
Total factory cost	.....	.....
GROSS FACTORY MARGIN	.....	.....
% of sales		
SELLING COSTS—DIRECT		
Home office		
Branch		
Advertising and promotion	.....	.....
Total direct selling costs	.....	.....
SALES DIVISION DIRECT PROFIT MARGIN	.....	.....
% of sales		
Selling costs—indirect		
Engineering design	.....	.....
SALES DIVISION MARGIN	.....	.....
% of sales		
OTHER COSTS		
Research allocation		
Variance amortization		
Shipping department cost		
Allocated engineering costs		
Other costs and other income		
Administrative allocation	.....	.....
Total other cost	.....	.....
PROFIT BEFORE TAXES		
% of sales